TRAFFIC ENGINEERING

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

COVER: The record-breaking 25.8 inch snowfall that struck New York City snarled surface transportation, including this line of buses in uptown Manhattan. View is looking north along 8th Avenue at 121st Street. The lineup extended from 116th to 127th Streets. (Courtesy Acme Newspictures.)

May We Offer . . .

One Way Streets . . . . . **F. B. Crandall** 203

London Traffic 1947 . . . . . **C. J. Tilden** 207

Railxing Treatment . . . . . **W. C. Brandes** 211

Automobile, U. S. Favorite . . . . . **H. C. Link** 215

A Parking Survey . . . . . **H. W. Osborne** 216

Reference Notes 226

ITE Activities 236

Personalities 242

Robert O. Swain, *Editor*

Le Verne Johnson, *Managing Editor*

Associate Editors: Fred W. Hurd, Herbert A. Keegan, James E. Reading, Charles LeCraw, J. A. Carrothers, Margaret Woolverton, Henry Barnes.

Associate Technical Editors: F. B. Crandall, H. M. LeRoy.

Business Staff:

Norman Damon, *Circulation Manager* -- Russell Harrison, *Advertising Manager*
Joseph Havenner, *West Coast Circulation Manager*

Entered as second class matter November 7, 1941, at the Post Office at Plainfield, New Jersey under Act of March 3, 1879.

TRAFFIC ENGINEERING is published monthly by the Institute of Traffic Engineers at 400 Watchung Avenue, Plainfield, New Jersey. Editorial Offices, 2312 North Vernon, Arlington, Virginia. Business Office, Strathcona Hall, New Haven 11, Connecticut. Permission to reprint contents with customary credit line is given unless otherwise stated.

Single copies 20c, subscription price $2.00 per year in the United States. Other publications of the Institute of Traffic Engineers include the Annual Proceedings, and Traffic Engineering Handbook.

VOLUME XVIII **FEBRUARY, 1948** **NUMBER 5**

Frankly Speaking

AT the December meeting of the Washington section of the Institute, a discussion of parking facilities in connection with airport design aided in spelling out the definition of traffic engineering, a profession whose technical skills must be supplemented by varied considerations necessary to assure safe and expeditious movement of vehicles for the pleasure and convenience of the motoring public.

In the consideration of parking facilities at an airport, it is not only necessary to be concerned with the overall demands and the actual design of storage areas, but emphasis must be placed on the type of parker and his time requirements. The discussion in Washington revealed that one of the first phases of an airport parking study was consideration for the employees of the airport itself. Traffic engineers have learned through years of experience that while the local merchant demanded unlimited parking in front of his store, normally he and his employees used the choicest, and frequently the only, parking spaces adjacent to the store. One of the modern treatments applied to parking studies at airports is the reservation of these "choice" sites for the "cash" customers. Provisions are made, of course, for the employees, and in the case discussed in Washington, the "choice" sites were those closest to passenger facilities while the employee was given a site closer to his working area. Thus, a thorough analysis, coupled with good horse sense, has provided complete satisfaction.

The advancement of commercial aviation hinges on the ability of people to conveniently use an airport. Such convenience is determined largely by the motor traffic facilities available.

It is encouraging to find members of the *Institute* who have become leaders in this field, and who have approached the problem in such a scientific manner.

Robert O. Swain

Editor

One Way Streets

by F. B. CRANDALL, *Associate Technical Editor*

PRIOR to December, 1946 Jefferson Street in Portland, Oregon (ORE 2 & 6) carried an average daily traffic of some 14,200 vehicles. This traffic consisted not only of "long haul" traffic moving between Portland and the Tualatin Valley but also traffic moving to and from coastal points via the Sunset and Wilson River Highways coupled with a predominance of local traffic originating on or adjacent to Jefferson Street.

The street was but two lanes in width and the friction caused by parked vehicles, buses and heavy intersectional traffic caused considerable congestion. In December Jefferson Street was made a one-way street carrying westbound traffic while Columbia Street, a local service street one block to the south, was made one-way for eastbound traffic.

In order to determine what benefits in the form of time saved would accrue to motorists because of the creation of the one-way street system a time study was made both before and after the change.

Methods

In making the study the method of matching license numbers was employed. Survey stations were established at Front and Fourteenth Avenues, the extremeties of the one-way section, and at intermediate points between Fourth and Fifth Avenues and at Park Avenue (See Figure 1).

Two men operated each station. One man called out the license number of each vehicle passing the station while the other recorded the number and the time. All timing was done by synchronous electric clocks and the clocks at the several stations were kept in synchronization through the use of one master stop watch. The initial phase of the survey was conducted on November 21 and 22 and the final portion February 24 and 25, 1947. Traffic moving in one direction only was studied on each day of the survey. Hours of the survey were from 7:30 A.M. to 3:30 P.M. Portable traffic counters were placed at the station between Fourth and Fifth Avenues throughout the survey.

Speed-Delay Study

During the periods of the survey the Traffic Engineering Bureau of the City of Portland conducted a speed-delay study using the floating car technique. The results of the speed-delay study are presented herein.

On completion of the field work all data were coded and put on Hollerith punch cards. The license numbers were matched and running times for all sections and vehicle classifications were determined. Although commercial vehicles were broken down into the various standard classifications in the field data, it was found that insufficient data were obtained to permit a more detailed classification than trucks and buses. All passenger vehicles were analyzed as a single class.

Results

Except for eastbound buses in the section between Fourteenth Avenue and Park Avenue wherein the running time was unchanged it was found that the creation of the one-way street system resulted in an appreciable time saving for all classes of traffic. Table I indicates the changes in speed effected;

No buses were recorded moving through the central section between

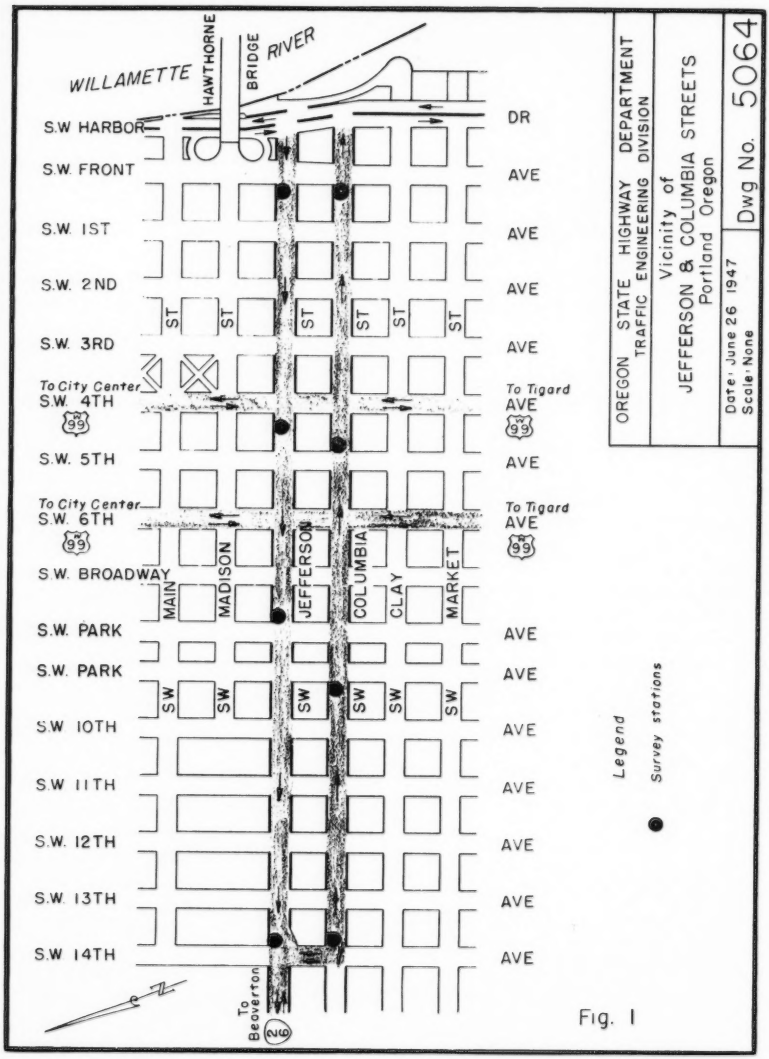


Fig. 1

Fifth Avenue and Park Avenue. The increases in speed range from a maximum of five to zero miles per hour. Average increases in speed for the entire section were as follows:

Vehicle Classification	Increase
Passenger	2.6 m.p.h.
Truck	2.0 m.p.h.
Bus	1.5 m.p.h.

Speed increases as determined by the floating car method were 7.0 miles per

TABLE I

BEFORE AND AFTER VEHICLE SPEEDS

Section	Vehicle Classification	Average Speeds (M.P.H.) Eastbound One-Way	Eastbound Two-Way	Westbound One-Way	Westbound Two-Way
Front to Fifth	Passenger	16.7	12.5	14.7	11.0
	Truck	15.0	11.5	13.2	10.0
	Bus	13.6	12.4	11.0	10.2
Fifth to Park	Passenger	12.0	10.9	12.7	11.4
	Truck	12.0	10.9	11.4	10.4
	Bus	....	....	....	....
Park to Fourteenth	Passenger	15.6	14.2	15.0	10.0
	Truck	15.6	12.0	13.8	10.0
	Bus	13.0	13.0	12.9	9.0

TABLE II

ANNUAL MONETARY SAVINGS

Section	Vehicle Classification	1946 Average Daily Traffic	Annual Time Saving (Veh. Min.)	Annual Monetary Saving
Front to Fifth	Passenger	4,700	7,257	$5,442.75
	Truck	740	1,107	3,874.50
	Bus	280	170	595.00
Fifth to Park	Passenger	8,140	4,952	3,714.00
	Truck	1,030	627	2,194.50
	Bus	180	—	—
Park to Fourteenth	Passenger	12,780	31,047	23,285.25
	Truck	1,450	3,583	12,540.50
	Bus	280	547	1,914.50
	Total		49,290	$53,561.50

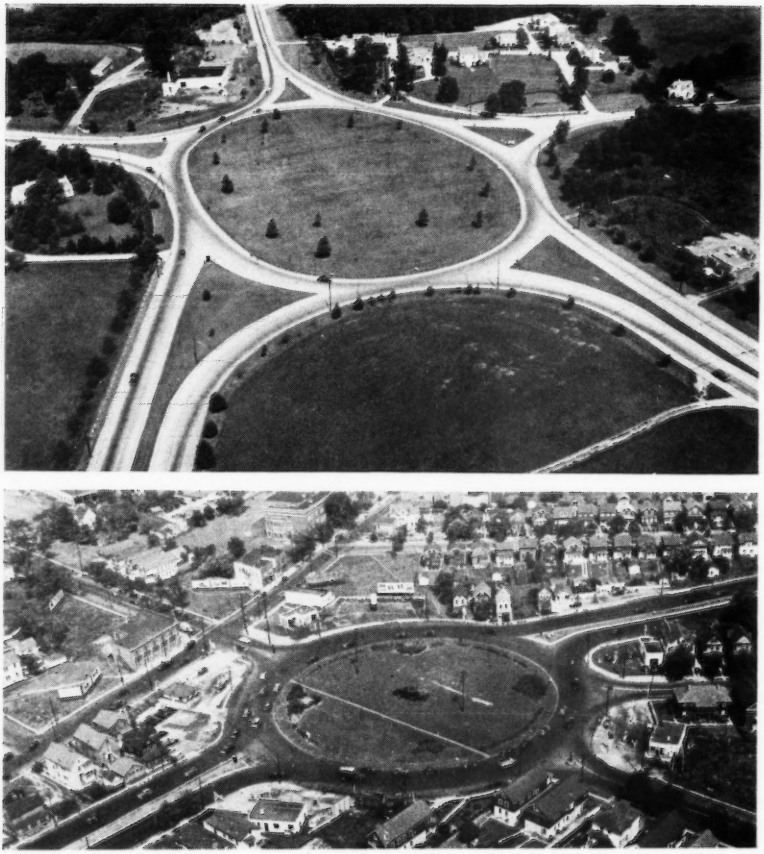
hour westbound and 5.3 miles per hour eastbound.

Other than the added convenience and ease of travel, the major benefit accruing to the motorist from an improvement such as this would be from a saving of running time. The savings in time and distance are the most tangible benefits obtained and may be translated into terms of monetary value. Although there is very little agreement among authorities on the value of time under the present economic conditions for the purposes of this report a figure of $0.75 per hour for passenger vehicles and $3.50 per hour for commercial vehicles has been used.

Table II indicates the annual savings in vehicle minutes and its monetary equivalent for each section and vehicle class.

(See CRANDALL *on Page 244)*

RURAL AND URBAN ROTARIES SHOW DESIGN CONTRAST



Courtesy Public Roads Administration

The above aerial photographs, taken by the Public Roads Administration, show a contrast in rural and urban rotary design. In the top picture sufficient right of way provides graceful design plus adequate approaches and mixing space. The scene is at the intersection of Routes 4 and 33, near Freehold, New Jersey. The lower photograph is the intersection of U. S. 1 and Bayway Avenue, Elizabeth, New Jersey. Note the shorter mixing lanes on the right and the direct access to the circle from the abutting filling stations. The approaches to the lower urban rotary do not provide easy transition permitted in the upper rural rotary.

While traffic rotaries are now considered a design of the past, New Jersey was a pioneer in the development of this type of facility.

ESTIMATE 32,500 KILLED

The 1947 traffic death toll for the United States is estimated at 32,500, according to the National Safety Council.

This is 1,200 less than the 33,700 killed last year, despite a big increase in motor vehicle travel.

London Traffic, 1947

by C. J. TILDEN, *Hon. Mem., ITE*

THE most striking feature of London's post-war appearance is the destruction caused by German bombs. This is unbelievable in extent and severity unless actually seen. London is grim and a bit shabby. On the map there is a white, completely vacant area at the Bank and Guildhall, labelled "approximate area destroyed by enemy action 1940-41". It is nearly a fourth of a square mile in extent, in the heart of London's business district. And that was just the beginning; the bombing kept up for another four years. Hundreds of office buildings, shops, churches, apartment houses were levelled to the ground. We drove through the East End,—block after block of little houses, the former homes of working people, destroyed by direct hits or by resulting fires, with evidence of the great loss of life as well as of property. We passed piles of rubble, some of them 30 or 40 feet high and covering three or four city blocks, trash cleared and collected from many parts of the city.

Pedestrian "Guard Rails"

Brick fences 3½ or 4 feet high, miles of them, have been built along the inside edges of sidewalks to keep pedestrians from falling into the open pits that once were basements. Our guide told us that many of these basements were water-proofed and used as cisterns to store auxiliary supplies of water for fire-fighting. London's regular water supply was inadequate, for the Germans timed their incendiary bomb raids to strike at the times of extreme low tide in the Thames so that this usual source of extra water supply was not enough. The Huns were thorough.

The bomb devastation was not confined to the Bank District. There are not many sections of London, except in the outlying edges, where one may walk a half-mile or more without seeing vacant lots where fine dwellings, hotels, or other buildings, often six or eight-story structures of stone or brick, had once stood. The rubble and debris has been largely cleared away but the task or rebuilding seems barely to have been started. This is due primarily, of course, to the almost universal shortage of building material.

Traffic Moves

But the London street traffic flows on. In spite of severe "petrol" (gasoline) shortage and the difficulty of getting repair parts for vehicles, the streets seem to be as busy as before the war. Those leviathans of London's surface transport service, the great double-deck buses, are frequent and well patronized. I have seen as many as five at one time in the space of a short block on Oxford Street, all going in the same direction. Stopping points for taking on or leaving passengers are indicated by slender posts (2 in. of 2½ in. iron pipe) at the sidewalk curb, but all buses do not stop at every post, an important difference from the white-painted poles as used in this country. Each post bears a sign showing by numbers which buses stop at that point. The stopping posts for any one line, as No. 12, or 26, or 88, may be some distance apart with several posts of other line numbers intervening. People waiting for a bus invariably "queue up" behind the post, those at the head of the line getting first chance on the bus. At times these lines may be half a block or more long. At posts which serve as stops

for buses of several different lines, it may happen that those near the front of the line do not want the particular bus that has stopped, in which case those who do, though further back, step out of the line, hurry forward and enter the bus. There is surprising good order and courtesy in these lines, the result doubtless of wartime experience and discipline.

One safety precaution which is common practice on bus and street-car lines in this country is lacking in London. That is the practice of keeping exit and entrance doors closed until the vehicle comes to a full stop for taking on or discharging passengers, and again closing doors before starting up. There are no outside platform doors on London buses. Intending riders may, and sometimes do, hop on the bus after it has started up and passengers sometimes drop off before it comes to a full stop, but this is by no means common practice. Buses in general appear to run on a fairly close schedule for the stops are often a bit too brief. This was the subject of correspondence in the "Times", quoted in full below, which tells a rather illuminating story:

"*Speed of London Buses*" (31 July 1947) To The Editor of the Times:

"Sir—Is it known whether the recent speeding up of London buses has multiplied accidents to passengers? Lately I have several times barely escaped death or damage because a bus started just as I had set one foot on it; and it seems likely that many others, especially the old or lame, have not been so fortunate. It is quite common, too, for upper-deck passengers to be carried past their stopping places. When I remarked to a conductor that he might wait long enough to let one come down he replied seriously and apologetically, 'We haven't got the time'. Yours faithfully, Margaret Jackson, Adam Street, W.C. 2."

"*Risk in Alighting From Buses*" (6 August 1947)—Passengers' Protests "The risk of injury to which some London bus drivers and conductors are said to expose their passengers by not waiting long enough at stopping-places is the subject of many letters which have reached THE TIMES, in support of Dr. Margaret Jackson's letter, published on July 31.

"Most of the writers agree that the chief cause of the trouble appears to lie in the recent speeding up of time-tables. But Colonel C. A. White, of Cambridge Square, W. 2, who complained to London Transport, was told that 'in compiling the schedules due regard is had to the time required for the buses to stop to pick up or set down passengers,' and that the staff have instructions 'to see that all reasonable facilities are afforded to passengers boarding or alighting'.

"Another reader considers that the basic reason for undue speed and undue loitering alike is that the turn-round time has been reduced to as little as three minutes, chiefly for lack of vehicles. The crew therefore hurry through most of the journey, to be sure not to arrive late at the terminus; and the same factor accounts for the 'maddening slowness' towards the end of the journey, since they are reprimanded if they arrive too early, but are not allowed extra time if they arrive late. This correspondent suggests that each crew might take out not its own bus but the next bus in. That would save the time now needed for the turn-round, but would need an extra crew on each route."

"Excessive Loitering"

"Mrs. Peggy Hill, of South Parade, Bedford Park, writes:—I imagine for every passenger who shares Dr. Jackson's complaint of excessive speed there must be 10 who suffer

the experience of excessive loitering . . . I have been told by more than one conductor that the reason is that time-tables are based on the peak rush hours when traffic is at its worst, and that these same time-tables must be rigidly adhered to (on pain of monetary penalties imposed on both driver and conductor by London Transport) when the rush hour is past and roads are clear.

"A number of correspondents give specific examples of inconsiderate behavior by conductors and drivers. Colonel White speaks of a recent journey during which the conductress rang the bell three times as they were nearing a stop, telling the driver not to halt, though he and a woman wished to get off. Remonstrance drew the answer that they should have begun to leave their seats earlier. On the other hand, a reader at Bletchingley, Surrey, writes that an elderly woman who, having been thrown on the floor of the bus and injured on her way to exit, was told she should have kept her seat till the vehicle stopped."

Taxis Show Age

The buses, important as they are, by no means monopolize the streets. Taxis, delivery wagons, service vans and lorries, private cars and the hand-propelled barrow carts of fruit peddlers, each take a share of road space. Taxis are conspicuous for two qualities—there are not nearly enough of them and secondly they are uniformly old and shabby. Their rates are not high, comparing favorably in economy with those in New York or elsewhere in spite of the much higher cost of fuel. But it is very difficult to secure one especially at the busy times. I have often signaled 12 or 15 in succession before finding an empty one and on occasion have had to give up the quest and resort to a bus. In general, drivers

The automobile industry's backlog of unfilled orders, according to authoritative estimates, calls for approximately six million passenger cars and trucks and prospects for increased car prices and higher living costs generally.

The industry got its 1948 production program underway with fairly good chances that it will deliver 4,500,000 passenger vehicles and one million trucks this year.

Most of these will go to persons who have had orders on file for up to a year or more. But even if advancing prices force any considerable number of would-be buyers out of the market the industry will sell all the vehicles it can make because orders continue to accumulate faster than cars and trucks can be manufactured right now.

of all vehicles are law-abiding and fairly considerate, although I have seen instances of driving through a red light. Traffic control whether by officers or lights, is substantially the same as with us, but there seem to be fewer police assigned to this work and more reliance on the lights.

Rotary traffic circles, or "roundabouts", have been established at certain intersections where the conditions are favorable.

Current Problems

Some of the current problems are perhaps best illustrated by the following comments quoted from the *"London Times"* and the *"London Telegraph"*—

"Red Amber to Stay" (London Times 26 July 1947)
Traffic Signals Unchanged

There is to be no change in the sequence of traffic-light signals. The Minister of Transport has decided this after considering reports on experiments at 35 crossings in London, Liverpool, Glasgow, and Gloucestershire, at which the red-with-amber signal has been omitted. There was no marked difference in the number and type of accident at each crossing

before and after the change-over, and there is no conclusive evidence, the Ministry of Transport states, that the omission of the red-with-amber would increase road safety."

"Traffic Experts" (London Times 2 August 1947)

"To The Editor of the Times:

Sir,—The Ministry of Transport has decided that the red-with-amber phase of the traffic lights shall stay. Time may show whether a change is desirable. Traffic experts are not always infallible. When traffic lights were first used extensively in the United States, one such expert pronounced that they were all right over there, but not suitable for use in this country.

"Again, when one-way traffic was first tried round Parliament Square some 27 years ago, it was soon abandoned as unsuitable. Even our greatest road-maker of this century was originally strongly opposed to dual carriage-ways on the grounds that they wasted space. He also opposed the system of a regulated monopoly for public service transport, such as now exists in the case of the L.P.T.B. and others. At present the system of school patrols, which was proved valuable in the United States and in our Dominions, is condemned as unsuitable for this country.

"Yet one further example can be quoted. Several countries have introduced a limited measure of control of pedestrian traffic. Over here we walkers still wander at will, and have not yet acknowledged that we are just as much a part of road traffic as are those who travel awheel, and that we too should be constrained to obey a few simple commonsense rules. Yours faithfully, J. A. A. Pickard, The Royal Society for the Prevention of Accidents, Terminal House, 52, Grosvenor Gardens, S.W. 1."

"Quickening City Traffic (London Times, 19 August 1947)

Slow Vehicles Banned

"The restrictions on slow-moving traffic in certain streets in the City of London, announced by the Minister of Transport, and reported in *The Times* of May 13, are to come into force on Thursday (21 August).

"On and after that date, mechanically propelled vehicles, restricted to a speed of five miles an hour, horse-drawn, and hand-propelled vehicles will be prohibited by regulations made by the Minister under the London Traffic Act, 1924, from using scheduled streets between 9:00 A.M. and 11:00 A.M. and 4:00 P.M. and 6:00 P.M. on Mondays to Fridays, inclusive. As the prohibition is limited to hours when traffic is heaviest only vehicles in the service of a local authority, which are being used, for the maintenance of essential street services, are exempt from the regulations.

STREETS PAVED WITH GOLD

Streets and highways throughout the northern states are lightly paved with gold every time rock salt is spread on them to remove snow and ice, according to the International Salt Company, Inc. Rock salt contains small quantities of gold, and there are appreciable quantities of the precious metal in sea water—as much as $1.80 worth of gold per ton of salt in the water. To date, however, no one has been able to extract gold from salt economically.

STUDY STATES

Twenty-nine police officer students attending the Northwestern University Traffic Institute's traffic police administration course made one-week studies of selected police departments in nine states in January.

Railxing Treatment

by W. C. BRANDES, *Member ITE*

SEVERAL months ago Dallas installed one of those railroad-intersection signal systems which, though not new, is of rare occurrence. Probably this particular installation is the only one of its kind in the entire southwest.

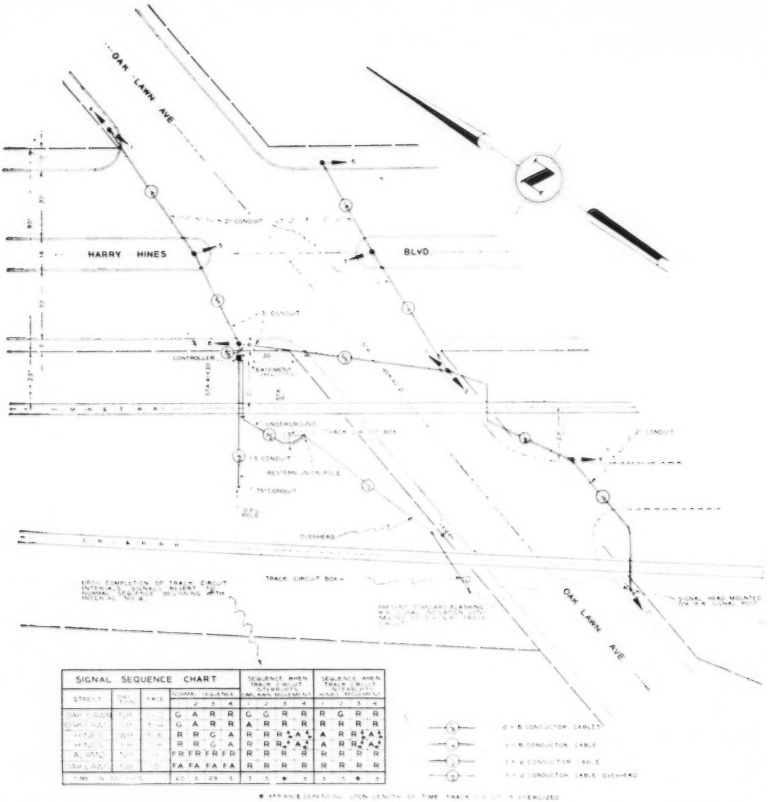
The intersection of Oak Lawn Avenue and Hines Boulevard rather suddenly developed as the heaviest traveled intersection in the northwestern section of the city. Hines Boulevard carries U. S. 77 and feeds North Dallas local traffic into the central business district. Oak Lawn in this area serves as a major cross-town artery. Paralleling Hines Boulevard are two railroad lines, one the Rock Island carrying heavy freight and fast passenger trains on a single track, the other rather infrequent passenger and terminal freight movements of the MK&T Railroad. The Rock Island crossing was equipped with a track circuit and standard railway flashing signal while the Katy had neither. Officials of the latter railroad were agreeable to installing adequate track circuits for use with intersection traffic signals.

Had Used Stop Signs

The major consideration in plans for signalization of the intersection consisted of proper clearance of vehicular traffic from the tracks upon approach of a train. This traffic on the south approach of Oak Lawn (see drawing on pages 212 and 213) normally accumulates during the red interval on the railroad right-of-way, often extending across both tracks. Before signalization the intersection operated as a two-way stop for Oak Lawn Avenue and for an interim period as a four-way stop intersection. Under both of those regulations at the approach of a train the accumulated traffic on the Oak Lawn railway crossing exercised its rightful prerogative of moving into the intersection with the least possible delay. Now instead of a stop sign a red stop-and-go light holds these vehicles on the track area. At the first warning of a train approach, however, all other than northbound Oak Lawn signal indications that may be green change through normal clearance interval to red giving northbound Oak Lawn the full right-of-way for a predetermined though adjustable time. At the same time an auxiliary signal at the south side of the Rock Island tracks (Signal #10) changes from a normal flashing yellow indication to a steady red. This is to prevent additional vehicular movement onto the track area than can be passed into the intersection during the track-clearing interval. A minimum of 20 seconds warning is assured before the fastest train arrives at the crossing. This is more than ample to clear the track area.

At the conclusion of the interval given wholly to northbound Oak Lawn traffic the signal indications change to green on Hines, the street paralleling the railroad tracks. Here they remain until any train has completed its crossing, thus opening the track circuit. During such indeterminate interval no vehicular movement is allowed in the direction toward the tracks. That is accomplished by the use of arrow indications on Hines Boulevard. A vertical and left turn arrow is shown to eastbound Hines traffic while a vertical and right arrow governs westbound, with red of course on each signal head.

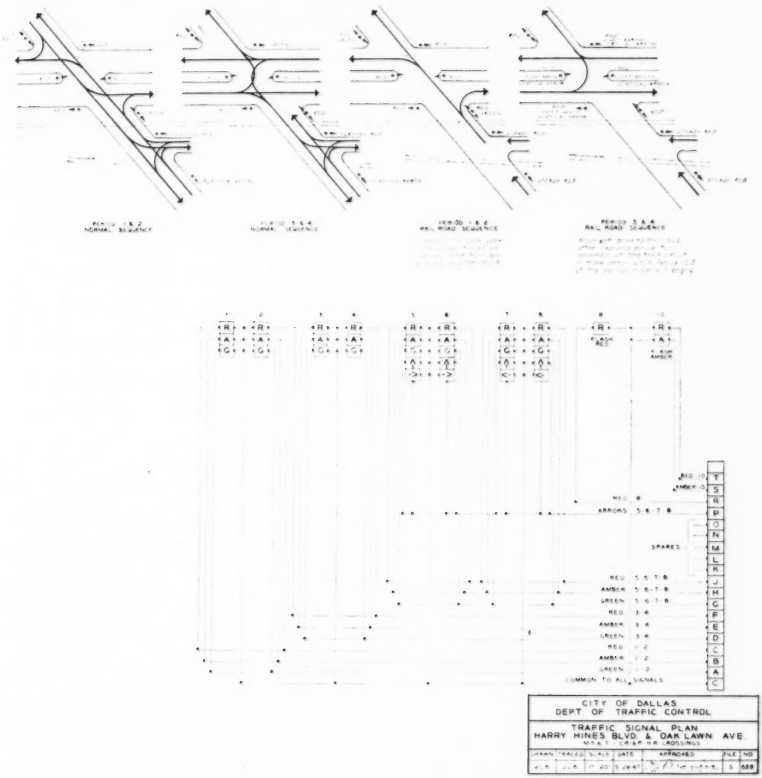
Following train clearance Hines



Boulevard is immediately given its normal clearance interval followed by green for both directions of Oak Lawn. This initial green interval will always be longer than its normal time, for movement of accumulated traffic, its exact length dependent upon the position of the camshaft with respect to the dial at the moment of release.

Another unusual condition exists in the form of a third street, Alamo, entering upon Oak Lawn Avenue from the east midway between the Rock Island and the MK&T tracks. Carrying a light volume of traffic that street is normally controlled by an additional auxiliary signal (No. 9) showing a flashing red indication. At the approach of a train this indication immediately changes to steady red and remains so until the train has cleared.

The traffic signal controller for this job was minutely specified as to functional requirements and credit is due Crouse-Hinds engineers in devising relays and circuits that produce the desired result. After receipt from the factory the controller was tested thoroughly through all its operational functions in our own shop before being installed at the intersection. As a result essentially no disruption to



traffic occurred when the final switch was thrown.

At the northwest corner of this intersection is a high school football and track stadium to which at times is attracted huge numbers of automobiles and pedestrians. Now at the close of the football season this signal installation is still the subject of commendatory remarks. During the initial operation in May of last year there was no more than the normal "breaking in" period of something new and different. When the driving public had time to figure out for themselves the characteristics of operation upon the approach of a train it became definitely clear just what our objective was—the reasonable and safe control of traffic by electrical devices.

POLICE TRAINING

The University of California will offer specialized training for traffic police personnel on its Berkeley and Los Angeles campuses during February and early March.

Police from eleven western states are eligible to attend the courses which are offered by the university in cooperation with the Traffic Division of the International Association of Chiefs of Police.

WHEN WEATHER GOVERNS HIGHWAY CAPACITY

—Acme photo

The snow on the fire escapes lining homes on 98th Street, between Park and Madison Avenues, makes a wintertime pattern as New York City begins the gigantic job of digging out of the worst snowstorm in its history. Stalled vehicles many of them hidden by huge drifts, await rescue. In the background is Central Park.

TRAFFIC STUDY IN MEMPHIS

The City Commission of Memphis has authorized the engaging of a traffic engineer for a city-wide study and recommendations for easing congestion and speeding up traffic. This action was taken after a series of newspaper articles on Memphis' traffic deficiencies appeared in the Memphis Commercial Appeal. Additional official and public attention was focused on the problem by a second series of feature articles in the same newspaper which were based on the recommendations of the booklet, "Making Better Use of Today's Streets", published by the U. S. Chamber of Commerce with Automotive Safety Foundation cooperation.

(Ed. Note: The City of Memphis has consummated a contract with Smith-Dibble & Co. for this survey.)

Automobile, U. S. Favorite

by Dr. Henry C. Link
North American Newspaper Alliance

THE American people are great travelers, according to a psychological barometer survey made with men and women in cities and towns from coast to coast. These people were asked by 380 interviewers of the psychological corporation how many trips, if any, they had made, how they had traveled, and how they would prefer to travel if they could afford it. The first question asked was:

"How many trips of 500 miles or more, one way, did you make during the past year?"

Trips	Per Cent
One	22
Two or more	17
None that long	61

There were important differences by various groups of the population. The percentage of people who had made one or more long trips was:

Owners and managers	64
White collar	49
Skilled workers	35
Unskilled workers	25

The automobile was by far the favorite mode of travel. When we asked people how they had made these trips, they answered:

Mode	Per Cent
Auto	61
Train	36
Air	14
Bus	6
Ship	1

These percentages add up to more than 100 because some people named more than one method of travel.

We then asked the people who had taken a long trip:

"If the cost were the same, how would you go next time?"

Mode	Per Cent
Auto	46
Air	29
Train	20
Bus	2
Ship	1
Uncertain	2

Thus the automobile remains the most popular means of travel, but trains and buses show a big drop, while air travel doubles in the choice which people would make if the cost were the same.

TOLL ROAD RECORDS IN VIRGINIA LIBRARY

Complete records of the Valley Turnpike Company, a corporation that operated a toll highway between Winchester and Staunton from 1838 to 1919, have been acquired by the Virginia State Library, Randolph Church, librarian announced recently.

The Valley turnpike was built of crushed limestone at an estimated cost of nearly $4,000 per mile. The corporation was capitalized at $375,000, representing 25,000 shares of stock sold at $15.00 per share, of which the State of Virginia had subscribed two-thirds.

Originally the 92-mile highway had toll gates at intervals of 5 miles, but the spacing of the gates was changed from time to time. The advent of the automobile made it advisable to space the toll barriers further apart.

The state acquired complete ownership of the Valley turnpike and turned it into a public road by authority of an act of the General Assembly of 1918. At that time the stock of the company was rated at $425,000. Private stockholders were reimbursed at a rate of 25½ per cent on their holdings out of a surplus of $45,000 existing when the company closed its books.

The present United States Route 11 closely follows the route of the old toll road.

A Parking Survey

by HENRY W. OSBORNE, *Member ITE*

Editor's Note: This is a report prepared by Mr. Osborne for the City of Hamburg, New York, on off-street parking developments in the vicinity of Buffalo and Main Streets. Mr. Osborne did this work as a consultant. Since it serves as an example of current problems in smaller cities, the report is published in its entirety. The report has merit in its use of aerial photography in making field studies.

PARKING is a fundamental requirement of a motor vehicle. The ends of the motor vehicle transportation of both passengers and commodities are not consummated by the movement of vehicles alone. The loading and unloading of vehicles require definite facilities and such operations are as vital to transportation as a road upon which the vehicles operate. Moreover, when vehicles are not actually used in travel and engaged in loading or unloading, they must be parked or stored at convenient points.

No study of the parking problem which does not include probable future developments and needs is worth the time and expense involved.

The parking problem will never be solved at the curb.

Parking meters are not a solution to the problem. They are merely palliatives and an aid in controlling curb parking.

Provision must be made off-street for all pick up and delivery services in business districts.

The provision of parking facilities is coming to be as much a public responsibility as a provision for the safe and rapid movement of vehicles. However, special interests such as stores, banks, theatres, office buildings, etc., which create a demand for parking facilities and which derive a large part of their income from motorists, should be required to furnish reasonable off-street parking space for their patrons, and every possible effort should be made to make it a reality.

Permanence and continuity of off-street parking facilities are a must.

All day parkers, such as employees of businesses within the district, should park off the street or outside of the area.

All parking regulations in the business district should be enforced impartially and continuously.

The parking problem is not impossible of solution but there must be some drastic changes made as to land usage and the habits and viewpoints of everyone.

What's going on elsewhere indicates that it would be tragic folly not to start immediately the gradual steps necessary to deal with traffic problems before it drowns the business and commercial life of Hamburg.

A concise summary of this study is set forth in the paragraphs that follow.

Survey for Local Facts

The Parking Committee of the Chamber of Commerce has circulated, throughout the business district, a questionnaire asking for valued opinions on such subjects as: curb parking regulations, enforcement, parking meters, parking lots, rear entrance truck deliveries, etc. The results of this study will be submitted in a separate report. If the businessmen of Hamburg are aware of the future of traffic, business and civic developments—the results of the survey will substantiate many of the recommendations included herein.

Loading and Unloading

Loading and unloading of merchandise in the central business district is a headache in every community. Milwaukee and Buffalo, for example,

have load zones, but they are only a partial solution.

Locations where there are many deliveries at one time make a complicated problem but one which can be solved by off the street loading entrances or by prohibited parking at the curb in the congested area—thus prohibited areas to be used only for loading and unloading.

The City of Buffalo issues a five dollar yearly permit for a zone (30′ maximum length) to business and professional establishments after a thorough analysis of their problem. Signing is in accordance with city specifications and costs for signs and installation are paid for by the applicant.

Parking Meters

As of December 31, 1945, 473 cities in the United States were operating approximately 203,000 parking meters.

According to public opinion survey made by the Municipal Finance Officers Association and reported in the special bulletin No. 1946 F, March 1946, motorists like meters because they find it is easier to get a parking space, merchants like them because customers do. They increase carry home trade which reduces delivery cost—and last but important, taxpayers like meters because they contribute to the city's coffers and help pay the enforcement and traffic improvement bills.

Aerial Photographs Aid

The latest techniques in studying the problem were utilized and a very unique one was aerial photography. Through the cooperation of the Sheff Studio of Hamburg, a series of photos were made to aid not only the merchants and city officials but the public as well, in studying the several proposals that are to be outlined in this report.

EXHIBIT "A": Aerial photograph showing proposed street opening between Main and Union Streets west from Buffalo Street with connections mid-block to Hawkins Street and Main Street. Suggested Dimensions—36′-0″ pavement—(three 12′ lanes); No Standing or Parking permitted; 5′-0″ (minimum) sidewalks both sides; 2′-0″ parkways both sides; Overall width of right of way—50′-0″.

Off-Street Parking Plan

Exhibit A shows the proposed street to be installed parallel and between Main and Union Streets, west of Buffalo Street. It is suggested that the new street terminate somewhere just west of a point opposite Hawkins Street and that a cross street be developed, giving circulation only in the immediate area of the business district. Such a plan preserves the residential properties in Center Street, or in other words, confines traffic circulation with the destination in the Hamburg business district to the streets and areas closest to the business district.

Exhibit B is another aerial photograph with the new street installation superimposed and showing a consolidation of existing and proposed parking lot areas north and south of Main Street, west of Buffalo Street.

Exhibit C It is recommended that consideration be given to the acquisition of properties known as 37 Union Street and 36 or 42 Main Street so that ingress and egress may be provided to the existing off-street parking

EXHIBIT "B": Aerial photograph showing view from the south indicating proposed roadways shown in Exhibit "A" and present and proposed parking areas that would be enhanced, developed or expanded by this plan. View shows both sides of Main Street west of Buffalo Street. For identification purposes, parking lots have been defined as lots A, B, C, D, E, F, G. (See Exhibit "D" for more detai.s.)

EXHIBIT "C": Aerial photograph showing present parking, and future extensions to the parking facilities for business properties on the east side of Buffalo Street. The first step should be to acquire properties on Union and Main Streets, indicated as drives, to give safe and convenient accessibility to present parking areas. As demands dictate, lands marked as "future" should be purchased and put into service.

facilities in the area north and east of Main and Buffalo Streets. Obviously, the approaches from Buffalo Street into the present parking lots are hazardous, inconvenient and cause considerable congestion to traffic movements to Buffalo Street between Main and Union Streets.

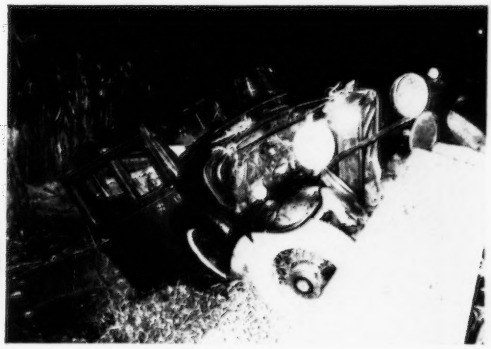
Exhibit D shows, with some detail, the present locations of buildings and their approximate size, the new street development, and present and proposed parking lots. It would make this report very voluminous if we went into exact details of all the items shown. It is thought that this shows clearly many of the pertinent details such as buildings to be removed, street developments, present and proposed parking lots and some of the existing buildings.

It is my considered opinion that this report outlines a plan which will

STATE HIGHWAY DEPARTMENTS!

CITY STREET DEPARTMENTS!

. . . and all TRAFFIC ENGINEERS!



Put PRISMO on guard for you to prevent scenes like this!

Safety is your business. Safety is our business. So let's get together and keep the night death rate from climbing. Traffic statistics prove the danger to be 5 TIMES GREATER AT NIGHT.

Together we can cut down the percentage of deaths, maimings and property losses - - - and together we can cut down on your budget costs with:

PRISMO Reflective Safety Pavement Markings
(PRISMO LIFELINE)

and

PRISMO Reflective Street & Highway Safety Signs
(PRISMO SIGN KIT)

WRITE TODAY FOR NEW INFORMATIVE BULLETINS AND COMPLETE DATA

The SPHERE of SAFETY

PRISMO SAFETY CORPORATION
HUNTINGDON, PA.

EXHIBIT "D": Drawing showing many of the details of the parking plan for the area as shown in Exhibits "A", "B". The Code: **Black**—approximate areas used by business buildings. **Gray**—present parking areas, some surfaced but all need conditioning to give more efficient use and maximum utilization. **Cross-hatched**—suggested parking areas. **NOTE:** Suggested building removals. Connection made between lots "F"—"G".

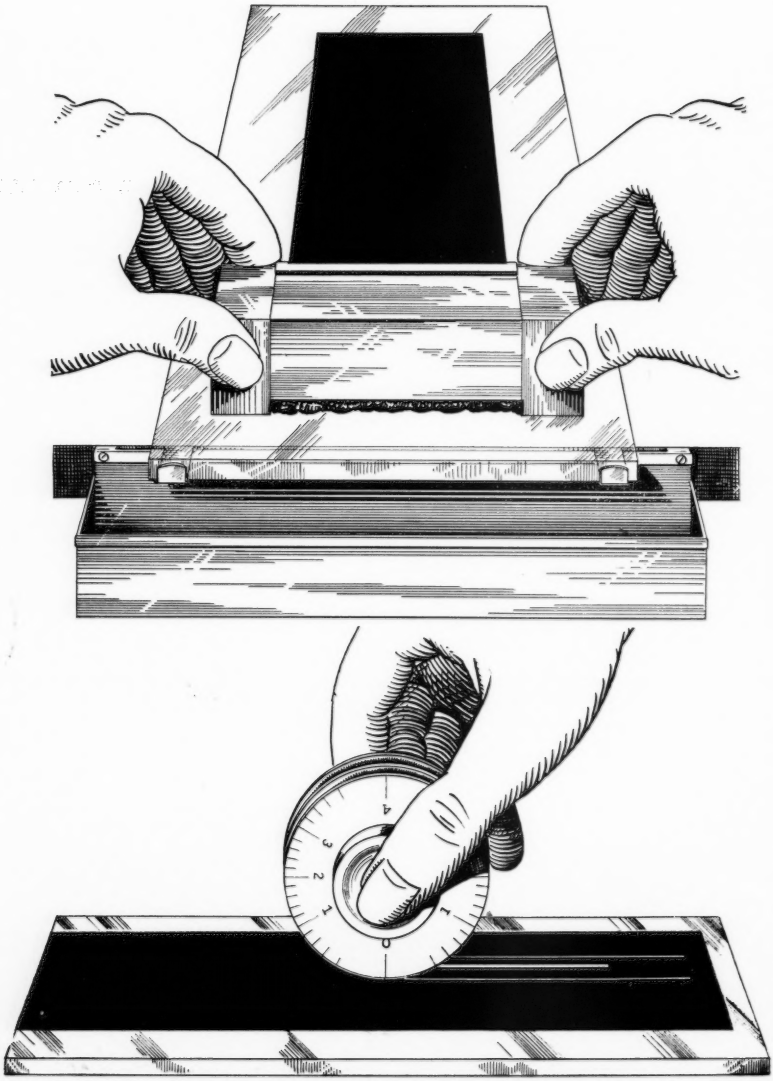
provide sufficient off-street parking for the next ten years or more for the Hamburg business center. This program is a must if the merchants, city officials and citizens desire to keep this a healthy business activities center.

Why There Must Be Action in Creating Parking Lots

1. For parking is a No. 1 community problem.
2. For example, parking reduces street traffic congestion, thus bettering traffic flow in busy hours and at times of fire and other catastrophies.
3. To assure a progressive future for the city.
4. To keep the old customers and visitors coming and to be inviting to the new.
5. To maintain prosperous business conditions in the city.
6. To keep up property values so they may continue to pay taxes so vital to the community's general operations.
7. New business districts are bound to be developed if conditions are not corrected in the existing area.
8. There is no time to waste.

Signs of
GOOD IMPRESSION
PLAY GROUND
QUIET ZONE
TRAFFIC SIGNALS AHEAD
Proper marking of streets and highways makes a good impression on home folks and visitors alike . . . because they know good signs are a sign of good government. Use the sign that's always improving. That's Miro-Flex, America's finest complete sign line. Available reflectorized or plain embossed, with either glass or lucite buttons. Standard line or specials to your specifications.
Send for your catalog TODAY.
2-48
MANUFACTURED BY
MIRO-FLEX CO., INC.
1824 EAST SECOND STREET · WICHITA, KANSAS

NEW COMMERCIAL DEVELOPMENTS



A new wet film thickness gage (bottom picture), developed by Interchemical Corporation, Finishes Division, and introduced by the Henry A. Gardner Laboratory, Inc. of Bethesda, Md.,

ON THE SHELF

American Transit Association
Manual of transit and traffic studies. The Association, 1947. 73p.

Automobile Club of Southern California. License Department.
Summary of motor vehicle acts, 1947. United States and Canada. The Club, Los Angeles, c1946. 390p.

Grossman, W. L.
Air passenger traffic. Remsen Press Division, Chemical Publishing Co., Brooklyn, 1947. 205p.

Louisiana. Alexandria. Louisiana Department of Highways.
Traffic survey of Alexandria metropolitan area. By Louisiana Dept. of Highways and local governmental units in cooperation with the U. S. Public Roads Administration, 1947. 107p.

National Conservation Bureau
Safety supervision in motor vehicle fleets. The Bureau, 1947. 214p.

National Highway Users Conference
1947 Laws Bulletin. A digest of new legislation affecting highway users. The Conference, Inc., Washington, 1947. 32p.

National Highway Users Conference
School buses: safety equipment and construction requirements. Washington, D. C., Dec. 15, 1946. 217p., Mim.

New York. State Department of Public Works.
Report on arterial route improvements and connections to the New York State thruway, the Dunkirk urban area, Chatauqua County, New York. The department, 1947. 117p., processed.

Connecticut. Hartford. Department of Engineering.
Coordinated transportation for Hartford. A report of the department of engineering to the commission on the city plan. The Department, 1947. 55p.

Highway Research Board.
Current road problems. Recommended practice for treatment of icy pavements (no. 9-R revised edition). The Board, 1947. 14p.

A tree isn't the only thing that can grow in Brooklyn. It may seem a bit unseasonal to mention it, but this celebrated borough is going to sprout a slew of posies.

Call it the "new look", if you will. Anyhow, here's the story. A year or so ago the New York City Board of Transportation decided that the Brooklyn citizenry was not riding in the style it deserved. (Brooklynites had been painfully aware of this for a long time.) After all, transit riders who supported so faithfully, so distinguished a baseball club as the Dodgers, were entitled to something better than the rattling, whining surface car service they were getting. To make for smoother sailing—'er riding—the Board ordered 435 spanking new, electric trackless trolleys.

at the 1947 Paint Industries' Show at Atlantic City, N. J., is now available.

The instrument is said to be very easy and quick to use. The operator simply rolls the gage over the wet film and reads the film thickness directly on a calibrated scale engraved on the outer wheel of the instrument. No calibration is necessary. The instrument is small in size, made of stainless steel, and will also measure wet film thickness on simple concave or convex surfaces.

A new type doctor blade (top picture) for laying down film forming media of any predetermined thickness is now being made available for general use by the Henry A. Gardner Laboratory, Inc.

By the use of an adjustable gate, it is possible to lay down wet films from .001" to .20" thick. A set of shims supplied are used for making the desired gate clearance.

BRILLIANT "CENTERLITE" LASTS

WHAT IS "CENTERLITE"?

Millions of microscopic glass spheres pre-
a long-wearing white or yellow compound
"Centerlite." Applied to a road surface, the c
bonds to the road in an even coating that is
by traffic to a lasting reflective brilliance.

ASTS UP TO 5 TIMES LONGER!

spheres pre-mixed in compound make up surface, the compound ting that is polished lliance.

You're way ahead on costs—material costs, application costs—with "Centerlite." One application of "Centerlite" will give up to five times the service you'd get from ordinary marking materials. This gives you a sizable saving in material costs, plus as much as an 80% cut in maintenance expense. Instead of several applications, one coating of "Centerlite" does the job.

In addition, "Centerlite" actually gets *more brilliant with wear.* The same traffic wear that erases ordinary pavement markings serves to buff "Centerlite" to an ever-increasing brightness.

For more information on "Centerlite" and help with any highway marking problem you may have, write to Dept. TE 248 at the address below.

CENTERLITE

TRADEMARK OF M. M. & M. CO.

REFLECTIVE COMPOUND

ANOTHER 3M COMPANY PRODUCT

Made in U. S. A. by MINNESOTA MINING & MFG. CO., St. Paul 6, Minn.

REFERENCE NOTES

SAFE STOPPING DISTANCES

SPEED (MPH)	PERCEPTION AND BRAKE REACTION TIME SECS	REACTION DISTANCE FEET	SAFE COEFFICIENT OF FRICTION	BRAKING EFFICIENCY %	AVE. RATE OF DECEL. ft/sec²	BRAKING DIST. (ON LEVEL) FEET	TOTAL BRAKING & REACTION DIST. FEET
30	3.0	132	0.50	50	16.1	60	192
40	2.75	162	0.47	47	15.1	113	275
50	2.5	183	0.45	45	14.5	185	368
60	2.25	198	0.42	42	13.5	286	484
70	2.0	206	0.40	40	12.9	408	614

Values based on those given in "A Policy on Sight Distances for Highways", Table 1. A.A.S.H.O.

YALE RESEARCH PROJECT SPONSORED BY SLOAN

In the interests of more efficient and safer highway transportation, the Alfred P. Sloan Foundation, Inc., has awarded a grant to the Yale University Bureau of Highway Traffic for a special study of relationships, policies and technical practices of state and local agencies concerned with traffic administration. The study will attempt to analyze and evaluate currently used engineering techniques.

Announcement of the grant of $15,000, which will finance two research fellowships for the study, was made by Arnold J. Zurcher, executive director of the Foundation.

A distinct departure in traffic research, the project is being undertaken in recognition of the need of modernizing and coordinating administrative activities in the highway field, for the sake of economy to promote greater freedom of traffic movement and to cope with the mounting problems of congestion and accidents.

The research will involve field investigations and studies of present administrative practices in states and cities of various sizes for the purpose of determining the most desirable policies and the most workable relationships between the different state-municipal units having jurisdiction in traffic operations. Governmental aspects, as well as fiscal policies and administrative controls, will be considered. Overlapping responsibilities will be explored and a factual basis developed for closer integration of the highway and traffic responsibilities of state and city departments.

Findings of the researchers will be embodied in a comprehensive report upon completion of their work.

The Alfred P. Sloan Foundation, Inc., sponsor of the project, was established in 1936 to promote the increase and diffusion of economic knowledge. Besides making grants available for this purpose to universities, colleges and private institutions, the Foundation provided funds for the establishment of the Sloan-Kettering Institute for Cancer Research, a division of the Memorial Hospital for the Treatment of Cancer and Allied Diseases of New York. Alfred P. Sloan, Jr., founder and president of the Foundation, is chairman of the board of the General Motors Corporation.

THAT'S THE STREET SIGN

THAT'S THE STREET SIGN FOR US MR. SUPERINTENDENT IT'S BEAUTIFUL BUT VERY PRACTICAL TOO !

- 45 years of successful manufacturing of signs have made GROTE products nationally accepted for all traffic control problems.

- SIGNS
- SIGNALS
- STREET NAME PLATES
- FIREBALL REFLECTOR BUTTONS
- GROTELITE REFLECTOR LENSES
- RAILROAD SIGNALS

Write, wire or call for your Catalogs today

FREE Pocket guide for successful safety campaigns

Prompt Deliveries

- DURABLE
- GRACEFUL
- DIGNIFIED
- PRACTICAL

The Grote Mfg. Co. Inc.

SIGNS · SIGNALS · STREET NAME PLATES

BELLEVUE, KY. • • OPPOSITE CINCINNATI, OHIO

GROTE

MINNESOTA MAKES TRAFFIC SAFETY PROGRESS

Following the 1946 President's Highway Safety Conference, the Governor of Minnesota, along with a number of other state chief executives, called a Governors Traffic Safety Conference. A lot of speeches were made and plans drawn up for the ensuing year. But the speech makers and plan makers didn't go home satisfied that they had solved all of the traffic ills of Minnesota.

The recently issued 1947 Progress Report prepared for the second Governor's Safety Conference shows results obtained.

Legislative Action

On the legislative side the following are some of the most important changes made in 1947 in line with recommendations made in 1946:

Pedestrians must obey all traffic signals.

Adoption of the standard uniform hand and arm signals for right and left turns and stops.

All vehicles must display a red light or a red reflector to the rear.

All new vehicles sold in Minnesota after July 1, 1949, must be equipped with mechanical or electrical turn signals.

No gates, loading racks, or partitions can be carried on the left side of any vehicle.

School buses must be equipped with stop arm signals. Stopping when a bus stops is required only when such stop arm is extended.

Bicycles are granted all privileges and made subject to all duties applicable to vehicle drivers, except those which by their nature cannot apply.

Provision is made to establish official brake-testing stations comparable to the official light stations which are now operating, and these shall be in operation from December 31, 1947.

Law was amended so that persons who have filed accident reports are not thereby barred from testifying in a trial growing out of the accident. They testify as to facts within their knowledge, but the report remains confidential.

The Safety Responsibility Law was amended, changing driving after revocation of license from a gross misdemeanor to a misdemeanor. This will make for more and better enforcement of the law.

An amendment to the Driver's License Law will require examinations for all new applicants for a driver's license after January 1, 1948.

Instruction in Schools

A course of study in health and safety was developed for statewide use and direct instruction was given in 257 schools.

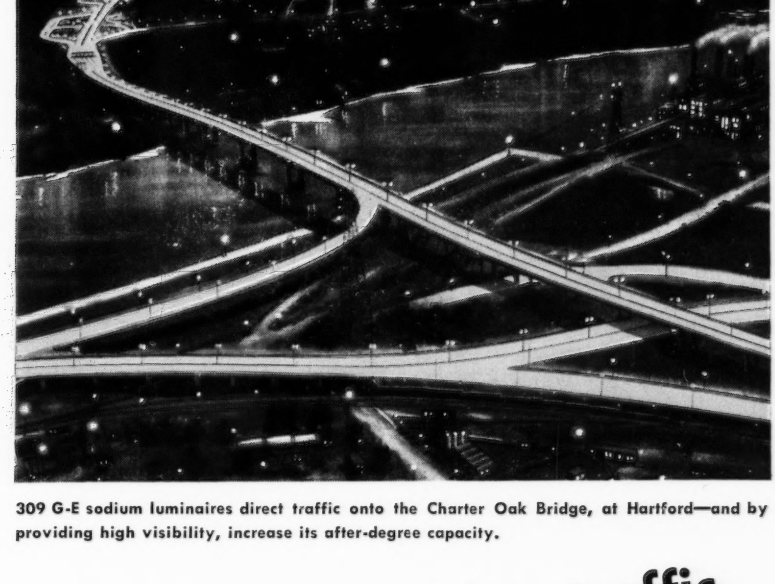
Progress was made in driver education and training. During the 1946-1947 school years 103 schools provided classroom instruction in traffic safety and 137 indicated such courses would be presented during the current term. The State Department of Education is inaugurating on an experimental basis behind-the-wheel instruction this year using trained instructors and dual control cars.

In school transportation, the Department of Education employed in 1947 a full-time supervisor of school transportation based on legislative authority resulting from 1946 Conference recommendations.

Safety Patrol Expands

In the School Safety Patrol program 47 new installations were made during the 1946-1947 school term bringing the total to 295.

A new bicycle safety manual was



309 G-E sodium luminaires direct traffic onto the Charter Oak Bridge, at Hartford—and by providing high visibility, increase its after-degree capacity.

how to move bridge traffic more safely at night

Sodium lighting is ideal for nighttime routing of traffic over a bridge. Its distinctive color directs traffic unerringly to the approaches, through intricate intersections, and onto the span itself. Its high level of well-distributed, comfortable illumination provides excellent visibility, which permits traffic to move at daytime speed with daytime safety.

Sodium lamps produce more lumens per watt than any other type. This outstanding efficiency is another and important reasen for its use on many of the nation's famous bridges, including San Francisco's Golden Gate, Hartford's Charter Oak.

General Electric has had broad experience in helping traffic engineers with lighting problems. For bridges, hazardous intersections, traffic routes—for better safety at night, let a G-E lighting specialist help you put the right light in the best place. *Apparatus Dept., General Electric, Schenectady 5, N. Y.*

GENERAL ELECTRIC

452-66

published and distributed to all schools.

Minnesota's public information program was stepped up with newspaper stories and mats being provided on a variety of subjects.

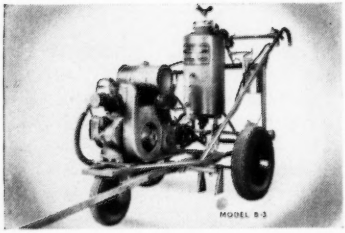
Minnesota's 115 local safety councils sponsored a number of activities during the year, including driver forums in three cities, county safety conferences in 9 counties, county-wide safety motion pictures shown in almost every theater in the state.

The driver license examination for new licensees will include a test of eyesight, ability to read and understand highway signs regulating, warning and directing traffic, knowledge of traffic laws, ability to exercise reasonable control of a motor vehicle, and fitness to operate a motor vehicle safely.

In its engineering program traffic safety design features have been incorporated in new construction plans, many miles of highway have been posted with "advisory safe speeds" on curves, no-passing-zone markings have been extended, one highway lighting project has been completed and another started and a Traffic Engineering Institute is planned at the University for 1948.

Penn State College is to sponsor a traffic engineering conference April 26-30.

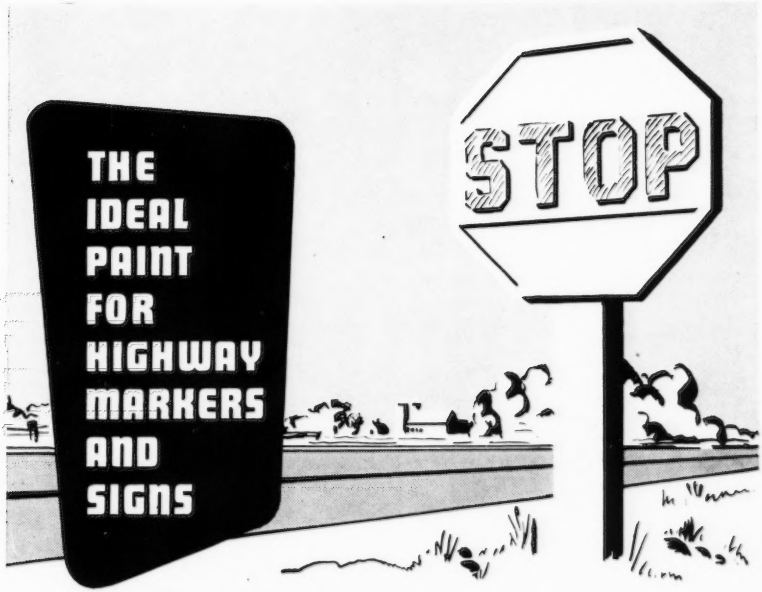
This is the Kelly-Creswell Model that will SOLVE your Municipal Zone-Marking Problems.



Uniform Cross-Distribution
Clean-Cut, Attractive Lines
Pressure Cleaning Equipment
Air-Actuated Traction.

More Highway Zone-Marking Material is applied thru K-C Equipment than thru any other make. **There must be a reason.**

KELLY-CRESWELL CO., Xenia, Ohio



NAZ-DAR *Weatherproof* SILK SCREEN ENAMEL

BY ACTUAL TESTS, a number of states have found NAZ-DAR Silk Screen Enamel FAR SUPERIOR to any other, and are using it with great satisfaction.

IT STANDS THE GAFF! Withstands exposure for indefinite periods . . . dries with a hard and tough surface with a fine glossy finish. Comes in paste form . . . 1 gallon will cover from 900 to 1200 sq. ft.

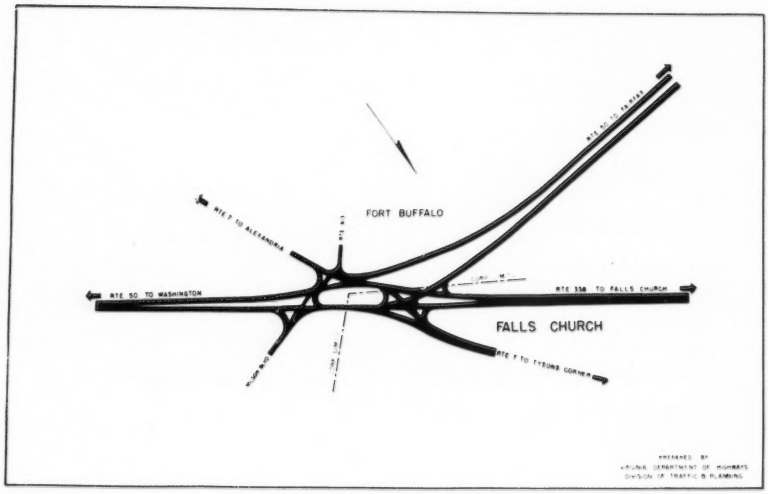
Write for full information and prices

WEATHER PROOF

TE2-48

THE NAZ-DAR COMPANY · 469-483 MILWAUKEE AVE., CHICAGO 10, ILL.

DESIGN BASED ON TESTS WITH SAND BAGS



Pictured above is the geometric design selected for the intersection of U. S. 50 and Va. 7, Fairfax County, Virginia. This type of channelization resulted from sandbagging the intersection and trying different designs (**TRAFFIC ENGINEERING**, July 1947). Traffic engineers who might have other ideas about this treatment are invited to send sketches to the editor, **TRAFFIC ENGINEERING**.

MAP 1948 PROGRAM

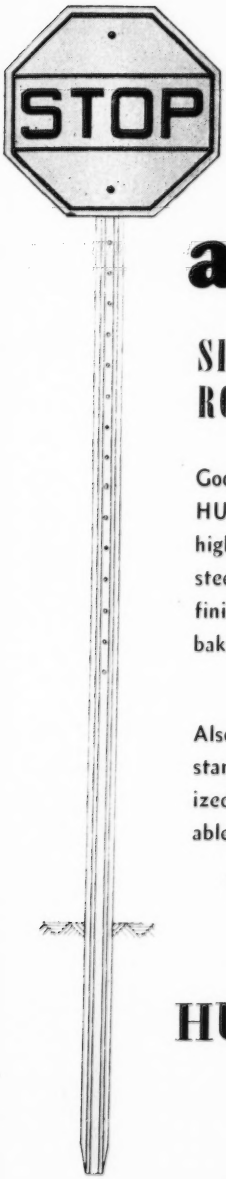
J. J. Newman, vice-president of the B. F. Goodrich Company, recently elected chairman of the Inter-Industry Highway Safety Committee, presided when the Committee met January 12 in Detroit to discuss the 1948 program and how to step up participation of automotive industry representatives in traffic safety activities. Mr. Newman succeeded L. W. Slack, who had resigned as vice-president and general sales manager of the Packard Motor Car Company.

W. G. Lewellen, Vice-President of the General Motors Corporation, has been elected Vice-Chairman of the National Committee. K. B. Elliott, Vice-President in Charge of Sales of the Studebaker Corporation, was appointed to the Committee by the Automobile Manufacturers Association to replace Mr. Slack.

TRAFFIC COURT CONFERENCE

The University of California will sponsor a conference for traffic court judges and prosecutors February 9 to 14 on the campus at Berkeley in cooperation with the American Bar Association and Northwestern University Traffic Institute. It will be the third of a series. The first was held last June at New York University.

INTERNATIONAL SIGN SYSTEM
REPRINTS AT TWENTY CENTS PER COPY
INSTITUTE OF TRAFFIC ENGINEERS
Strathcona Hall, New Haven 11, Connecticut



available

SIGN POSTS ROUTE MARKER POSTS !

Good signs should have good supports. HUNT Sign Posts are of consistently high quality — manufactured of rail steel for high tensile strength and finished with a glossy weather-resisting baked-on green enamel.

Also available are a complete line of standard Stop, Warning and Reflectorized signs; also Street-Name and Portable Warning Signs.

Write for Catalog and Prices

THE HUNT COMPANY

Established 1920

3700 W. McNichols Rd.
Detroit 21, Mich.

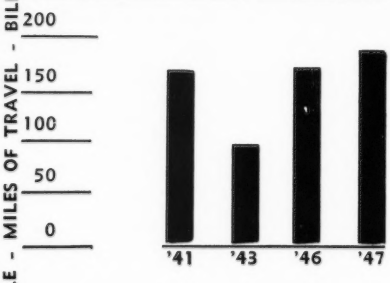
PRESS TO AID IN SAFETY PROGRAM

Mother Goose will be out to get the Simple Simons of the highways in 1948 in the newest edition of a traffic safety campaign devised by the Association of Casualty and Surety Companies and to be sponsored by newspapers all over the country. The educational campaign is a return engagement of a program which helped save an estimated 4,000 persons from violent death in 1947.

Where Mother Goose enters the scene is in a series of five-column advertisements which point out the leading hazards to drivers and pedestrians and urge care while traveling on the streets and highways. Tom the Piper's Son, Bo Peep, Jack Horner, Humpty Dumpty and several others of the rhyme-renowned family will appear in them. The advertisements are part of a "safety kit" of advertising and editorial material which will be furnished to all participating newspapers in the latter part of March. Just when the safety material will be used is left to the discretion of the individual newspapers or to their state press and publisher associations.

These press and publisher associations are the motivating forces behind the entire campaign. The Association of Casualty and Surety Companies, because it maintains an experienced staff of safety experts, was requested by the newspaper organizations to compile and coordinate the distribution of the campaign's educational material.

TRAFFIC TRENDS



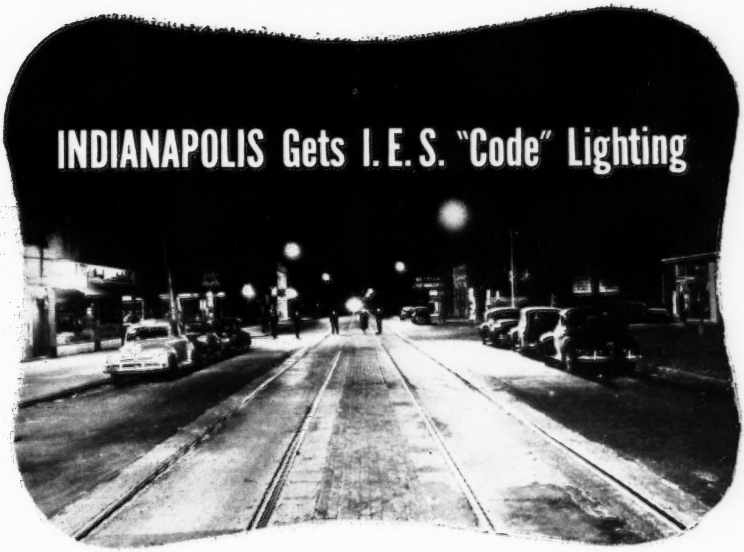
TRAVEL ON RURAL ROADS FOR THE TWELVE MONTHS OF 1941, 1943, 1946 AND 1947.

[Based on Public Roads Administration Data]

COST DATA, SAN FRANCISCO MUNICIPAL RAILWAY OCTOBER, 1947

	525 Electric Street Cars	22 Cable Cars	34 Trolley Coaches	250 Motor Coaches	Totals
Passenger Revenue	$1,119,886.85	$47,199.41	$57,971.74	$373,336.82	$1,598,394.82
Advertising	8,365.12	226.54	405.06	3,032.77	12,029.49
Miscellaneous	883.22	2.50	———	106.75	992.47
Total Revenue	$1,129,135.19	$47,428.45	$58,376.80	$376,476.34	$1,611,416.78
Revenue per Vehicle Hour	$7.24157	$6.74083	$4.64008	$3.99652	$5.97392
Total Cost per Vehicle Hour	7.54292	8.23911	4.27327	4.87602	6.47713
	—.30135	—1.49828	+.36681	—.8795	—.50321
Oper. Exp. per Vehicle Hour	$6.41885	$7.23995	$3.39895	$4.15896	$5.51012
Total Hours — October	155.898	7.036	12.581	94.201	269.716
Maintenance Cost per Vehicle Hour	$ .58332	$ .54026	$ .31954	$ .72088	

INDIANAPOLIS Gets I. E. S. "Code" Lighting



Cuts accidents, saves lives

Today Indianapolis people have greater protection after dark than ever before; civic pride is growing; merchants report a noticeable increase in night shopping; and the police are enthusiastic about the way the city's new street lighting reduces traffic accidents, helps them fight crime.

Typical of the quality of this new lighting is the installation at 42nd Street and College Avenue shown above. 10,000-lumen lamps are used here, with 6,000-lumen lamps between blocks. Luminaires are in alternate arrangement, 115 feet apart. About 1.5 footcandles are furnished at the intersection. Nine-tenths footcandles, the intensity recommended by I.E.S. for medium traffic, is provided along the rest of the thoroughfare.

Typical of the benefits in traffic accident reduction is the intersection of Massachusetts, College and St. Clair Streets—once a high fatality area. Between November 1, 1945 and October 16, 1946, before relighting, there were 15 night accidents at this location, one fatality. For the same period after relighting, night accidents dropped to 9, with no fatalities . . . a 40 percent improvement, not counting the precious life saved!

Indianapolis Power & Light Company, the progressive utility that worked with city officials in bringing about these improvements, reports popular approval of the program—urgent requests for its expansion.

THE WHOLE STORY—For the complete details, for additional accident reduction statistics, before and after pictures, and ideas you can use to promote better street lighting in your community, write for your copy of "Indianapolis lights up to save lives."

The Street and Traffic Safety Lighting Bureau, NEMA, 155 East 44th St., New York 17, N. Y.

Activities . . . .

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF TRANSPORTATION
WASHINGTON 25, D. C.

December 30, 1947

Mr. Robert A. Mitchell, President
Institute of Traffic Engineers
Strathcona Hall
New Haven 11, Connecticut

Dear Mr. Mitchell:

Your letter of 13 December 1947 to the Honorable Secretary of the Army offering the cooperation and services of the *Institute of Traffic Engineers* to the Chief of Transportation has been referred to me for reply.

It is my desire that there be incorporated in military highway transport all new highway traffic techniques and devices which will increase the efficiency and effectiveness of the transportation service.

In an effort to avail the Transportation Corps of technical advancements being made in the field of transportation, there has been organized a Transportation Corps Advisory Committee. Mr. B. W. Marsh, a member of your organization, is on that committee. In addition, Mr. D. K. Chacey, one of your members, is on my staff here in a civilian capacity. We are further encouraging reserve officers with traffic engineering experience to serve their temporary duty under training in this office when it can be arranged.

In response to your kind offer of cooperation and service, it would be very helpful if you would, through your Institute publications, encourage your members to take an active interest in the Organized Reserve Corps, and particularly the Transportation Corps reserve organizations. It will be of interest to you that Tables of Organization now being developed for Transportation Corps Units include provisions for professional engineers with traffic engineering training and experience.

Sincerely yours,

EDMUND H. LEAVEY
Major General
Chief of Transportation

WALTER F. ROSENWALD

(Assoc. Mem., ITE, 1931; Member 1934)

Walter F. Rosenwald, traffic engineer of the Minnesota Department of Highways, passed away suddenly at his office on January 6, 1948. Mr. Rosenwald, known as "Rosie" to his many friends throughout the state as well as in national organizations concerned with highway and traffic administration, had been connected with the Minnesota Highway Department since 1911. He had been in continuous service longer than any person now connected with the Department.

Mr. Rosenwald was born February 9, 1882 at Madison, Lac qui Perle County, Minnesota. After finishing high school he studied civil engineering at the University of Minnesota from 1900 to 1902. For two years he was employed as an instrumentman for the Minneapolis, St. Paul & Saulte Ste Marie Railroad Company on railroad location. From 1905 to 1910 he was engaged in private practice at Madison, Minnesota in land surveys and farm drainage.

In 1911 he took a position with the Minnesota Highway Commission as assistant engineer on location and construction, and from 1913 to 1916 he served as division engineer, also on location, design and construction. From 1917 to 1920 he was maintenance engineer with the Department supervising maintenance of the state aid road system, and from 1921 to 1937 he was in direct charge of maintenance of the state trunk highway system, including the handling of traffic problems.

In 1937 when the division of traffic and safety was created in the State Highway Department, he was made head of that division with the title of traffic engineer. He held this position until the time of his death.

Mr. Rosenwald was one of a group of three who in 1922 originated the shape system of signs which was first used in Minnesota, later adopted by the Mississippi Valley Association of State Highway Departments and shortly thereafter by the American Association of State Highway Officials.

In 1931 he became a member of the Joint Committee on Uniform Traffic Control Devices appointed jointly by the American Association of State Highway Officials and the National Conference on Street and Highway Safety. In 1942 he became Vice-Chairman of that committee.

In 1933 he was appointed chairman of the Committee of Traffic Control and Safety of the American Association of State Highway Officials, remaining as chairman of that committee through its several reorganizations until 1946. He served as a member of a number of other committees concerned with highway traffic and safety matters.

He was a member of the Minnesota Surveyors and Engineers Society, Engineers Society of St. Paul, the *Institute of Traffic Engineers*, Minnesota Association of Professional Engineers, the Minnesota Safety Council, National Safety Council, American Road Builders Association, American Association of State Highway Officials, American Association of Motor Vehicle Ad-

(See ROSENWALD *on Page 238)*

SECRETARY'S COLUMN

The Editor asked the Executive Secretary to prepare an article on "national" headquarters. I purposely declined pending the future date when the *Institute* will establish its own independent national headquarters in a permanent location. Then will be the time to really open up and give our readers a real feature article with pictures and all the trimmings. However, rather than turn down the Editor's request completely, I will attempt to give you a brief description herein of the current location and operation of headquarters.

The headquarters office is in an extremely desirable location in Strathcona Hall, Yale University. This office and all of its equipment is provided by the Committee on Transportation of Yale University. In addition, there are many other services provided that make the handling of routine matters both comfortable and pleasant. It is the opinion of your Executive Secretary that this service contribution of the University, since the office was moved to that location in June, 1945, has been one of the prime factors responsible for the Institute's rapid growth.

(ROSENWALD, *Con. from Page 237*)
ministrators and a number of other organizations. He was chairman of the traffic safety section of the Minnesota Safety Council.

Mr. Rosenwald was a charter member of the Pilgrim English Lutheran Church of St. Paul and was a member of the Board of Trustees of that congregation for a period of more than 26 years.

Surviving besides Mrs. Rosenwald are one son, Kermit Rosenwald; one daughter, Mrs. Margaret Hamm, and three grandchildren, all of St. Paul; his mother, Mrs. J. F. Rosenwald, of Hinckley, Minnesota; three brothers and two sisters.

TO ALL MEMBERS:

News of the death of W. F. Rosenwald was received at Headquarters too late to stop mailing of the Jan. 9, 1948 newsletter. We sincerely regret this unfortunate circumstance.

—Executive Secretary

The present headquarters staff, in addition to the Executive Secretary, is composed of Miss Ann S. Lincoln, Asst. Secretary, and Miss Bridget Pellegrino, Secretary for "TRAFFIC ENGINEERING" magazine. Were it not for the rapid and efficient work of these able assistants the Executive Secretary would be hopelessly enmeshed in quantities of intricate detail and far behind current operation schedules.

It would be impossible to outline for you the many details necessary for the proper conduct of Institute affairs. We are now in the process of expanding a selected mailing list of all official and non-official agencies, and other technical engineering societies interested in our work. We have also completed major changes in filing procedure in order to more effectively catalogue the increasing volumes of mail received each week. In addition, we are gradually building up a library of our own, thanks to a card index file donated by William B. Powell listing all materials used as reference in compiling the history of Traffic Engineering.

One of the first efforts to provide special services to the membership resulted in a survey of members interested in position changes and consultant work. A regular procedure has been established for handling requests for qualified personnel to fill position vacancies and for an accurate listing of consultants. Some of you may have already profited by this service.—ROBERT S. HOLMES.

19th Annual Meeting
INSTITUTE OF TRAFFIC ENGINEERS
Philadelphia, Oct. 11, 12 and 13, 1948

SAN DIEGO ORGANIZES TRAFFIC COMPLAINT RECORDS WITH ½ THE WORK...

Traffic officials cite savings achieved through KARDEX Control System

Kardex Visible Control of Traffic Complaints and Suggestions, formerly handled in a vertical card file by the San Diego Traffic Engineering Department, has meant spectacular savings in the time needed to operate the record *plus* greatly improved service in answering telephone inquiries, and in other related functions. Record review, a tedious, time-consuming job with the old "blind" file, is now accomplished by merely glancing down the visible margins of the Kardex record and noting locations of signals. Thus, a rapid survey is provided of current traffic conditions, and decisions are made instantly where to direct corrective action.

One clerk devotes only a third of his time to the operation of this record of five thousand locations filed by intersections and intervening points; this includes the making of all reports pertaining to the data in the record. Complaints, suggestions, and requests are assigned file numbers and posted to the card representing the location to which the communication refers. While the situation is under investigation a colored signal is inserted in the visible margin. When a decision has been made, the signal is moved to indicate completion and remains on the card for statistical purposes until the end of the month. At that time, the visible margins are consulted for rapid and easy preparation of monthly progress reports. In the words of San Diego's Chief Traffic Engineer: "This work-saving record is a true economy and a real necessity to the operation of the Traffic Engineering Department."

Send for the December, 1947 issue of *Systems for Government Administrators* which carries a detailed, illustrated description of San Diego's outstandingly successful Traffic Complaint Control record. In addition, you will find in this publication numerous informative and helpful articles dealing with a wide variety of problems currently faced by administrative officials in the various branches of government. Anyone holding an executive position in public administration is qualified to receive *Systems for Government Administrators* free of charge. To place your name on our mailing list, simply direct a request with your name, title and address to Systems Division, 315 Fourth Ave., New York 10, N. Y.

Remington Rand

THE FIRST NAME IN RECORD SYSTEMS

I T E PERSONALS

GERALD SHUTTLEWORTH is now with the Hunt Company in Detroit. He was formerly associated with the Michigan Highway Department.

ROBERT H. BURRAGE, Head of the Terminal Facilities Section of the Public Roads Administration, has recently assisted the state organizations in initiating parking studies in Cleveland, Toledo, Wichita and Charlotte. The direct interview type of study, described by Burrage at the Detroit meeting, has been adopted in some twenty-five cities throughout the country in the last two years. In connection with external cordon interviews it is now being used to provide origin-destination data as well, in cities of the 50,000-or-under class.

Twenty-seven newspapermen, representing influential newspapers in the country, attended a seminar last week in Chicago to discuss "Breaking the Urban Traffic Jam" with outstanding authorities. **D. GRANT MICKLE** took part in a discussion on "What Can Be Done Now" in the seminar held in Chicago. In the exhaustive study of traffic congestion, the newsmen considered the effects of strangling congestion on business and industry and on social welfare. In discussing remedial measures, the newsmen were given a clear understanding of the seriousness of congestion, and its threat to the future of urban development. The seminar was sponsored by the Public Administration Clearing House, Chicago.

GUY KELCEY reports that Edwards and Kelcey, Consulting Engineers, have opened a New Jersey office at 210 Market St., Newark.

S E C T I O N N E W S

ILLINOIS STUDENT CHAPTER

Editor's note: The following was sent to Executive Secretary Holmes. It is reproduced here because of its interest to ITE members.

I wish to take this opportunity to send you a check for $50.00 to cover the dues for 25 members of the student chapter. This is an increase of three members since I last wrote you. The names of the new members are as follows: John C. Henberger; R. H. Faber; Robert Hart.

I wish to thank you for your letter dated December 12, notifying us of approval of the Constitution and By-Laws. We have been busy lately compiling the field data taken on the vehicle and pedestrian counts in November, preparing it for analysis. We intend to send recommendations to the proper officials when we reach some form of possible solutions to the congestion problems. We did send a recommendation to the City Council concerning the present Traffic Ordinance. It is an excellent ordinance patterned on the Model ordinance, but certain portions of it need revising to meet present day conditions. The main trouble is a lack of enforcement and a failure on the part of the Traffic Commission to carry out its duties as they are specified in the ordinance. The Council sent us a nice letter thanking us and asking us for any more recommendations we care to submit in the future.

We are in the process now of sending a recommendation to the University officials concerning the drastic need for more adequate parking facilities, in the immediate campus area. The University is thinking seriously at this time of lowering the restrictions on students obtaining automobile permits, which would very likely add another 1,000 vehicles to an already overcrowded area. To meet this serious problem, they are thinking of prohibiting all students from parking in the immediate area during the normal business hours. Our chapter is against this solution for several reasons, the first being another example of discrimination against the students for whom the University is supposed to be for, and the second for the reason that it will just move the problem over several blocks onto streets that are barely able to meet the present traffic demands. Therefore, we made a general study of the parking facilities and demand in the area along with the average duration of parking along the street. Then we located various areas in the locality that could be converted into off-street parking lots and submitted a list of these to the proper officials.

We will only have time for two more meetings in January before the end of the semester. We hope to have Mr. Sorenson down from Chicago on the 21st to speak to us on the present expressway construction program in Chicago.

Robert J. Allen, Secretary-Treasurer

LETTERS TO THE EDITOR

The staff is to be congratulated on the constant interest improvement of Traffic Engineering due, in part of course to increased membership in the Institute, but principally to the unceasing thought and effort of you who are responsible for the magazine's contents.

Have you ever considered the listing of the annual Meetings and Conventions of the various technical organizations in each issue? These data, if available three months in advance of the event, would enable many of us whose time is fairly well committed to attend Meetings that we've missed because of engagements made before their dates were announced.

Stuart C. Hawley

LOSING FIGHT

In an article headlined "The Motoring Mess", the *Wall Street Journal* reports that American cities "are fighting a thus far losing fight against the spreading cancer of traffic congestion."

The *Journal* points out that in order to save the downtown areas "a more intensive use of mass transportation" is recommended. "When a bus is given exclusive use of one lane of a three-lane highway, the street can move four times as many people per hour as three lanes of autos."

REFLECTOR BUTTONS AND SIGNS

that give lasting brilliance

EVEN IN THE RAIN!

- DANGER SIGNALS
- SIGN POSTS
- HIGHWAY SIGNS AND MARKERS
- STREET NAME SIGNS
- RAILROAD CROSSING SIGNS
- REFLECTOR BUTTONS

CATAPHOTE

CORPORATION,

TOLEDO, OHIO

Personalities . . . .

This is the eighth in a series of articles about Institute Members.

J. L. Wehmeyer, engineer of traffic and safety for the Wayne County Road Commission, is not the only engineer in the Wehmeyer family, one of his sons having graduated in mechanical engineering from the University of Michigan in 1947. Joe's alma mater is also the Rosebowl winner where he graduated in 1916.

Joe's first position upon graduation from college was with the Pittsburgh-Des Moines Steel Company, but his stay was short for Uncle Sam was calling for good men to take care of the Kaiser at that time, so Joe entered the Army as a buck private. After two years' service he came out of the service as a 1st Lieutenant in the engineers, and accepted a position as county road engineer of Monroe County, West Virginia.

After a year in West Virginia, Mr. Wehmeyer returned to Michigan to take up his duties with the Wayne County Road Commission in 1920. For the first three years he was resident engineer of highway construction, for seven years was right-of-way surveyor, and for the past 17 years has been in charge of the safety and traffic division.

Joe has been active in all highway, traffic and safety problems in the Detroit area throughout his service with Wayne County.

In addition to membership in the

(See WEHMEYER *on Page 244)*

W. Graham Cole was a member of a small group of traffic engineers who met at the National Safety Council Congress in Pittsburgh on October 2, 1930, to lay plans for the organization of the *Institute of Traffic* Engineers. He served as a member of the committee appointed to develop the constitution and by-laws which were adopted at the first organization meeting of the *Institute* in New York City on January 31, 1931. He also served as the third secretary-treasurer of the Institute for three terms, 1940-1943.

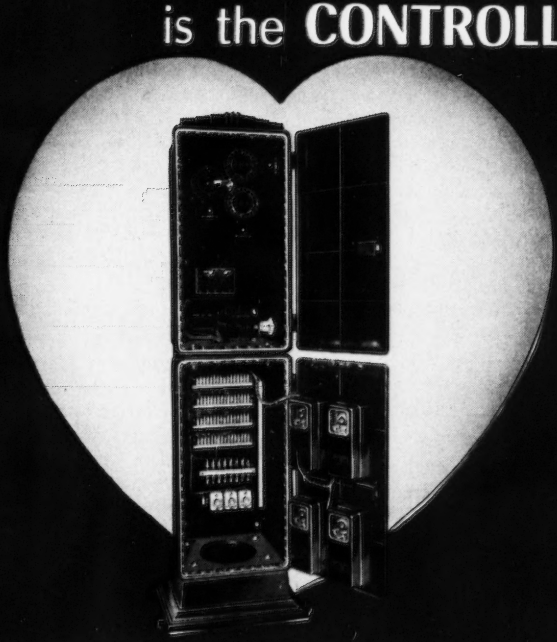
Mr. Cole has been engaged in accident prevention work for 30 years. Although his interests have not been confined entirely to traffic engineering, Graham early recognized the importance of this new profession and has consistently worked to maintain a high professional standard of the organization.

Born in Baltimore, Maryland, Graham was educated in Baltimore city public schools and graduated in civil engineering from the Maryland Agricultural College, now the University of Maryland, and from the Massachusetts Institute of Technology.

His first engineering job was as draftsman and later assistant designing

(See COLE *on Page 246)*

The **HEART** of traffic control is the **CONTROLLER**



A system of traffic signals is absolutely dependent on efficient controllers for its successful operation. Every traffic problem requires a controller designed to meet its particular requirement. That is where

CROUSE-HINDS
Complete Line of Traffic Controllers

is invaluable to the traffic engineer. It includes every type of controller necessary to meet the most exacting requirements of modern traffic engineering.

The controller illustrated is type GSTD three-dial synchronous for interconnected operation. It provides three timing splits, three offsets and three total cycles. Transfer of timing dials is accomplished automatically by time switches in the supervisory control.

CROUSE-HINDS COMPANY
Syracuse 1, N. Y.

Crouse-Hinds Catalog 226 lists a complete line of traffic signals, beacons, flashers, and a series of controllers designed to help you solve your traffic control problems . . . from simple installations up to the most complex heavy traffic problem. Send for your copy.

A Nationwide Distribution Through Electrical Wholesalers

Offices: Birmingham – Boston – Buffalo – Chicago – Cincinnati – Cleveland – Dallas – Denver – Detroit – Houston – Indianapolis Kansas City – Los Angeles – Milwaukee – Minneapolis – New York – Philadelphia – Pittsburgh – Portland, Ore. – San Francisco Seattle – St. Louis – Washington. *Resident Representatives:* Albany – Atlanta – Charlotte – New Orleans – Richmond, Va.
CROUSE-HINDS COMPANY OF CANADA, LTD., *Main Office and Plant:* TORONTO, ONT.

TRAFFIC SIGNALS · CONDULETS · FLOODLIGHTS · AIRPORT LIGHTING

(WEHMEYER, *Con't from Page242)*
Institute, of which he is a past director, he is a member of the American Society of Civil Engineers, Michigan Engineering Society, Engineering Society of Detroit, Highway Research Board, and Southeastern Michigan Association of Chiefs of Police.

Joe is a family man, having a wife and two grown sons, one of whom has been mentioned. The other is taking graduate work at the University of Michigan. Unlike many of his dog-loving friends, Joe has a preference for white cats.

He is a bridge and chess player of no small note, loves fishing and skating and, he says, "plays a little golf".

As of this writing Joe is learning Spanish at night school.

(CRANDALL, *Con't from Page 205)*

From Table II it is evident that the time savings effected, if translated into terms of monetary value, more than offset the cost of the improvement which in its first phase entailed only signing. Other benefit factors such as reduction of accidents were not considered in that insufficient time had elapsed since the change to provide adequate data.

In assigning credit for the higher overall speeds on the one-way street system the greatest credit must be given to the relief of congestion through increasing the number of traveled lanes from one to two. Whereas under two-way operation passing was nearly impossible during the hours of heavy travel, with one-way operation a passing lane is provided. Additional relief of congestion is provided in that of the 22 possible intersectional conflicts between vehicles on two-way streets 12 are eliminated when a street is made one-way. In particular the left turns mentioned before which have been eliminated were perhaps the greatest single cause of congestion on Jefferson Street.

An additional advantage of the one-way system which will be realized in proposed improvements is the possibility of increasing vehicle speeds through the installation of a progressive signal system. Under two-way operation the efficient timing of a signal system is virtually impossible with the short block lengths prevalent in Portland. With the one-way streets a further increase in speeds of several miles per hour will be possible when the signal installation is complete.

Conclusions:

From the results of study it is concluded that:

1. Traffic volumes increased 37% as a result of the creation of the one-way street system.
2. Time savings of up to one minute per vehicle were effected.
3. Average speeds for the entire section increased, with passenger vehicle speeds increasing 2.6 miles per hour, trucks 2.0 miles per hour and buses 1.5 miles per hour.
4. Total annual time savings are 49,290 vehicle minutes.
5. The total annual time savings translated in terms of monetary value amount to $53,561.50.

POLICE TO MEET

The 55th annual conference of the International Association of Chiefs of Police will be held October 10-14, 1948 at the Hotel Pennsylvania in New York City.

BIBLIOGRAPHY PUBLISHED

Prepared at the request of the National Committee for Traffic Safety, a bibliography listing publications and materials on highway safety and related matters of design, construction and traffic facilitation, has been printed for distribution by the Highway Research Board.

PARK-N-LOT*

THE NEW 10-HOUR MODEL
PARK-O-METER

. . . will pay for *Municipally* owned off-street parking lots and solve your whole parking problem!

PARK-N-LOT* meters are *positively doing the job* in cities now using them. They will do the same for you. Ask us to put you in touch with city officials who will give you their experience.

PROFITABLE Park-N-Lot* Meters pay for themselves quickly . . . pay for off-street parking facilities then continue to bring in revenue year after year.

DURABLE These automatic meters employ the same time-proved mechanism that has made Park-O-Meter the outstanding parking meter throughout the nation. They are foolproof, simple to operate, require minimum attention and servicing.

UNIVERSAL Park-N-Lot* Meters can be set and reset to meet every parking requirement in both busy and fringe areas. Here is a typical operating plan:

FRINGE AREA	BUSY AREA
2 hours, 1 nickel	1 hour, 1 nickel
4 hours, 2 nickels	2 hours, 2 nickels
6 hours, 3 nickels	3 hours, 3 nickels
8 hours, 4 nickels	So on through 10 hours
10 hours, 5 nickels	5 hours, 1 quarter
10 hours, 1 quarter	10 hours, 2 quarters

* Registered Trade Mark U. S. Pat. Off.

DELIVERIES NOW BEING MADE

Magee-Hale PARK-O-METER COMPANY

COMMERCE EXCHANGE BUILDING • OKLAHOMA CITY 2, OKLAHOMA

MACNICK DIVISION, *Manufacturers*, TULSA, OKLAHOMA

(COLE, Con't from Page 242)

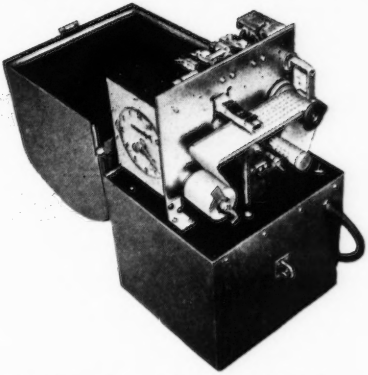
engineer of the Baltimore Sewage Commission. Later he entered the safety engineering field as safety engineer of the Maryland plant of the Bethlehem Steel Corporation and subsequently served as director of Safety and Industrial Relations of the Southern Pine Association of New Orleans; Director of the Conservation Bureau, United States Chamber of Commerce, Washington, D. C.; Safety Engineer, Lumbermen's Mutual Casualty Company; and Secretary of the Washington, D. C., Safety Council.

As Secretary of the Washington Safety Council, Graham became particularly interested in traffic engineering work, and in 1924 served as a member of the Traffic Commission. He joined the staff of the Metropolitan Life Insurance Company on January 1, 1925, and was placed in charge of the company's safety activities. Graham has given considerable attention to the development of traffic engineering as a profession and arranged for and conducted traffic engineering surveys in several cities.

He was appointed in 1931 a member of the original Joint Committee on Uniform Traffic Control Devices and served on this committee and its successors since that time.

Graham served as General Chairman of the Traffic Section of the National Safety Council for three years and now is a member of the Board of Directors of the Council. He has been closely affiliated with the American Society of Safety Engineers and served as chairman of the Metropolitan Chapter of the Society.

ON THE BEAM!
with
TUTHILL GUARD RAILS
Day or night, the convex, light-reflecting surfaces of Tuthill Guards can be seen better.
Strong, flexible, neat, they deflect blows—keep cars on the road. Choose Tuthill. REQUEST DETAILS
TUTHILL SPRING CO.
764 W. POLK STREET, CHICAGO 7, ILLINOIS



STATE ENGINEERS PLAN FUTURE ROADS WITH

Traficounter

State highway engineers, the original users of Traficounters, have this to say about the value of these precision built instruments in their highway planning.

1. "Our portable traffic recorders are used periodically for traffic counts on urban streets and for determining changes in traffic at scattered points on our rural highways.

2. "Mechanical counting equipment supplies most of the traffic information gathered."

3. "In every case (of planning for new roads and improvement of old roads) the value of traffic plays a very important part in determining the extent of such work and mechanical counting equipment has been found to be essential in economically gathering such data."

The Traficounter is twice as fast as any other counter of motor traffic; essentially an electric counter which records the over-lapping cars as they cross the dectector. It assures accuracy, is on the job 24 hours a day, and will save many man hours. **Streeter-Amet Company**, 1726 Belle Plaine Avenue, Chicago 13, Illinois.

STREETER-AMET

Now...the New MARBELITE Traffic Controller

NOW, an exceedingly simple, universal controller that is adaptable to practically every traffic need . . . of the small town, the middle-sized city, the large metropolis.

Possessing features that render it flexible in application, operation, and expansion. Containing design for service ease. And a motor which runs always in step, never out of synchronization. This controller is the long-awaited answer to present day traffic control problems.

Learn the details of its new features. Write today for the new bulletin M-10 which fully describes this new controller. No obligation. So write today!

THE MARBELITE CO., INC.
27 WARREN ST. NEW YORK 7, N.Y.

8 4 FILE

XU